R·I·T

Title: RTP-610A/610B

Semiconductor & Microsystems
Fabrication Laboratory **Revision**: **D** **Date: 2/13/2017**

Approved by:

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Process Engineer Equipment Engineer

1 SCOPE

The purpose of this document is to detail the use of the Rapid Thermal Processor (RTP)-610A and RTP-610B. All users are expected to have read and understood this document. It is not a substitute for in-person training on the system and is not sufficient to qualify a user on the system. Failure to follow guidelines in this document may result in loss of privileges.

2 REFERENCE DOCUMENTS

HEATPULSE 610 Operator's Manual (LF)

3 DEFINITIONS

n/a

4 TOOLS AND MATERIALS

4.1 General Description

4.1.1 The RTP-610A restricted use (no metals) chamber. The RTP-610B is a general use reaction chamber. Starting on the right as you look at the table there is the PC control system (P-CAT), RTP-610B chamber, RTP-610A chamber, and the Gas Handler. Underneath the table on the floor are two small chillers. The one on the right side is for the RTP-610B and the left one is for the RTP-610A. On top of the 610A chamber is the logic control switch box. On top of the gas handler is the process and facility gas manifolds. See Fig 1.

5 SAFETY PRECAUTIONS

The RTP chambers heat very quickly to temps up to 1100 degrees Celsius. Never run the chambers without a wafer in them. The pyrometer will give incorrect readings and could cause a fire or damage to the internal chamber. Never place anything in the chamber besides silicon wafers. Never use any solvents in or near the chambers.

6 FACILITIES

In order to run either RTP chamber it is required to turn on the Compressed air (CDA), Nitrogen (N2). *Oxygen and Forming Gas is only turned on if the user's process requires it.*

ALL THREE ARE ON A PANNEL ON THE BACK LEFT SIDE OF THE GAS HANDLER. See Figure 3

6.11 Turn on the compressed air. **See Figure 1**
6.12 Turn on the Nitrogen. **See Figure 1**
6.13 Turn on the Oxygen (if needed). **See Figure 1**
6.14 Turn on forming gas (if needed). **See Figure 1**

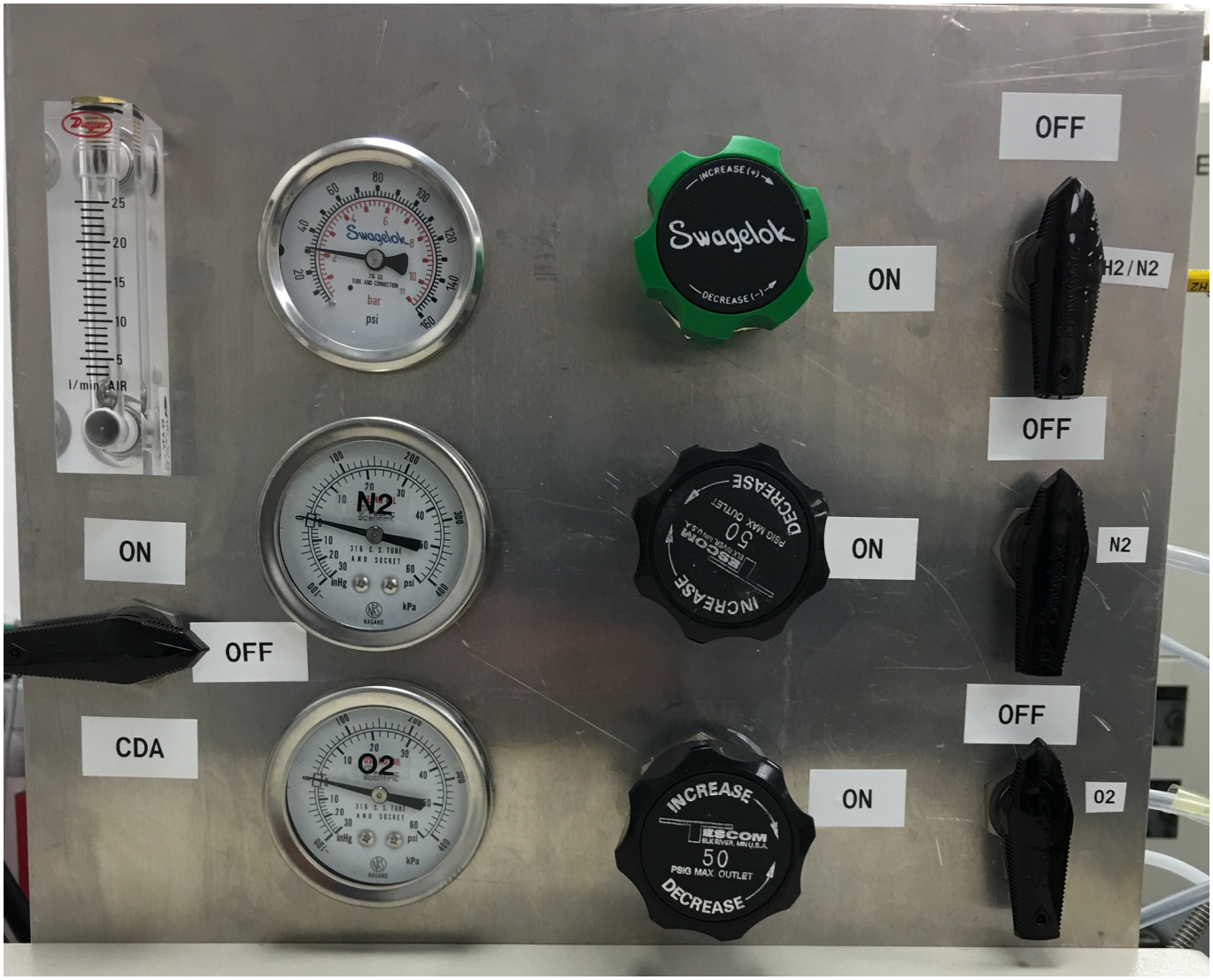

Fig. 1
Chamber and Facility Gas Manifolds

7 INSTRUCTIONS

7.1 Power up for RTP-610

7.1.1 **Turn on the Gas Handler**. Power switch on front left.
7.1.2 **Turn on the P-CAT PC**. Power button is located on the front face of the PC.
7.1.3 **Turn on the 610 chiller**. Located under the table on the right hand side. There are 2 switches to turn on labeled 1 and 2 both must be on.
7.1.4 **Turn on the 610 Chamber.** Located next to the PC. (Note: The other two switches on the chamber should be set to PYRO and AUTO for normal operations.) **EMISSIVITY IS SET TO 50 for BARE SILICON WAFER!**
7.1.5 **Press ANY KEY** on the PC keyboard for the **MAIN MENU** TO APPEAR.
7.1.6 Read a recipe into the PC memory by pressing "R" and selecting a recipe.
7.1.7 Go to the edit recipe screen option "C".

WHEN ASKED FOR A PASSWORD TO EDIT OR CREATE A RECIPE LEAVE THE FIELD BLANK AND PRESS RETURN!

7.1.8 Press F1 and ensure the wafer size is set to the size YOU are going to process. If it is not, cycle through by pressing "W" until it is correct.
7.1.9 Press "M" to return to main menu

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610 RED HANDLE 410 RED HANDLE

You have now entered the MAIN SCREEN of the P-CAT SYSTEM and completed the power up sequence for the 610. Section 8 and 9 contain operation and programming instructions.

7.2 SHUT DOWN

7.2.1 **IN ORDER TO SHUT DOWN THE TOOL YOU MUST WAIT AT LEAST 4 MINUTES AFTER THE END OF THE LAST RUN TO COOL CHAMBER!**

7.2.2 **Turn off the CHAMBER** power

7.2.3 **Turn off the P-CAT PC** power.

7.2.4 **Turn off the CHILLER** underneath the table. 1 switch for the 610A and 2 switches for the 610B.

7.2.5 **Turn off the GAS HANDLER POWER.**

7.2.6 **Turn off the COMPRESSED AIR**. **Figure 1**

7.2.7 **Turn off the NITROGEN Figure 1**

7.2.8 **Turn off the forming gas. Figure 1**

7.2.9 **Turn off the Oxygen** if used. **Figure 1**

When editing or creating a recipe PRESS RETURN when you are asked for a PASSWORD. The field must be left BLANK

BASIC OPERATIONS

SECTION 8

Dr. Fuller Factory Instructions:

- **Select recipe, read, and look for recipe name at screen bottom.**
- **Check the recipe, select create or edit and press enter twice. Exit this screen by pressing F10.**
- **Execute the recipe and run by pressing F1 (press any key to abort). If water or steam is visible shut off the power circuit breaker on the wall.**
- **To calculate high and low temperatures run a dummy wafer twice then run real wafers.**

ADVANCED OPERATION SECTION 9

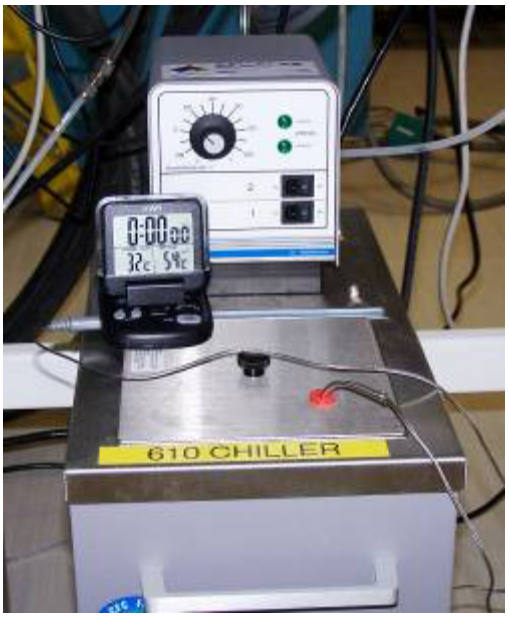
Summary of Changes	Originator	Rev/Date
Original Issue	Dave Yackoff	A-12/13/02
Updated all instructions	Dave Yackoff	B - 03/20/02
Updated all instructions due to relocation of tool	Dave Yackoff	C- 01/21/05
Eliminated references to the 410, updated photo of gas panel	R Battaglia	D-08/29/16

PHOTO GLOSSARY

610B Chamber

PCAT COMPUTER

Gas handler



610 Chiller